

SECTION I: ERC Summary and Relevance

ERC Summary:

The mountain and plains states of Colorado, New Mexico, Arizona, Wyoming, Montana, North Dakota and South Dakota share a common set of problems that outstrip existing resources: rising population; large groups of underserved and minority workers; region-specific work-related health issues such as mining, energy, and agriculture; and geographic distance from educational centers of excellence in occupational health and safety. The Mountain and Plains Education and Research Center (MAP ERC) was founded in 2007 to incorporate faculty and students from two institutions of higher learning into an integrated, multidisciplinary Center, to improve worker health, safety and well-being. The objectives of the MAP ERC are to promote interdisciplinary graduate education in occupational health, safety and well-being; to provide needs-based continuing education and outreach in an underserved region; to support pilot research projects that advance the National Occupational Research Agenda; and to improve minority recruitment and retention in the allied fields of occupational health and safety. The MAP ERC incorporates five training programs of the University of Colorado and Colorado State University. Core programs include Industrial Hygiene and Occupational and Environmental Medicine Residency. Three allied programs offer graduate training in Health Physics, Occupational Ergonomics, and Occupational Health Psychology. All five programs provide graduate or post-doctoral/residency level training. All programs are committed to providing a highly interdisciplinary educational experience through shared courses, field experiences, research collaboration, and conferences. The MAP ERC places a special emphasis on the integration of health protection and health promotion (Total Worker Health™) in curriculum, outreach, and continuing education activities. The Pilot Projects Program rigorously reviews and supports R2P community and academic projects that address regional priorities, serving as a stimulus for attracting junior investigators and advancing their careers in the field. Continuing Education places particular emphasis on state-of-the-art online courses for a geographically dispersed occupational safety and health workforce, providing a learning management system platform that is available to CE programs at the other ERCs, in addition to MAP ERC. The Outreach Program is integrated into all programs, bringing together many regional professional organizations and creating collaborative opportunities for addressing workplace challenges. Working in concert with university and community organizations, the MAP ERC has continued to address the need for greater diversity and inclusion of minorities in occupational health and safety professions. The MAP ERC enjoys partnerships with the High Plains Intermountain Center for Agricultural Health and Safety, with the NIOSH Affiliate Total Worker Health™ Center for Worker Health and Environment, and with neighboring ERCs and other Training Programs in the region.

Relevance:

The MAP ERC fills a regional need to improve worker health and safety in a seven state region by training occupational safety and health professionals, advancing NORA sector and cross-cutting needs, conducting relevant research, promoting career development, and offering needs-based continuing educational opportunities. The long-term goal is to improve worker health, safety and well-being, train the next generation of leaders in the field, integrate health promotion and health protection, and develop a more racially and ethnically diverse occupational health workforce to serve their communities.

Key Personnel:

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ERC web link:

<http://www.ucdenver.edu/academics/colleges/PublicHealth/research/centers/maperc/training/Pages/aboutmaperc.aspx>

SECTION II: Program Highlights of High Impact

Creating Accessible All-Terrain Vehicle (ATV) Safety Training for Montana Ranchers

The Challenge: ATVs have proven to be unsafe and have taken 12,391 lives between 1982 and 2012. Occupational use of ATVs is on the rise with a 193% increase in work related fatalities seen between 1999 and 2008. While a number of industries are using ATVs, 65% of occupational fatalities have occurred in the agricultural sector and Montana led the nation in 2012.

Approach: The High Plains Intermountain Center for Occupational Health and Safety (HICAHS) partnered with the Mountain & Plains ERC to increase the number of certified ATV safety trainers serving rural agriculture communities throughout MT. Using the HICAHS small community grant program, 11 Ag Extension Agents located across MT have received ATV Safety Institute (ASI) training and certification. They were able to promote safe ATV use and become certified to teach the five-hour ASI hands-on training in their communities.

Impact: Extension Agents holding ASI certification must provide two training sessions per year to sustain their certification. Each session trains between six and eight Ag producers resulting in a guarantee of 132 – 176 Ag producers being trained each year in safe ATV operation throughout the state. As of September 2014, more than 50 Ag producers have been trained. A recent partnership with the MT Workers' Compensation Assistance Bureau will enable tracking of impacts and expected reductions in work-related ATV injuries and fatalities among the ranching communities throughout Montana.

Leveraging Online Learning for Occupational Safety and Health Professionals

The Challenge: There are an estimated 48,000 OS&H professionals in the U.S. workforce (McAdams 2011). Dynamic and changing industries require ongoing and continuing education to ensure that this workforce has

the necessary knowledge, skills and abilities to protect workers and prevent injuries, illness and fatalities throughout America's workforce.

The Approach: The MAP ERC developed a nationally and internationally accessible online learning management platform to deliver leading edge OS&H continuing education and has made it available for all 18 ERCs to use for delivering content. An agreement has been signed by all NIOSH funded ERCs to have this site host online learning for all centers, in order to maximize resources and leverage technology to serve the needs of the OS&H professions.

Impact: The MAP ERC presently hosts more than 110 online courses serving OS&H professionals. The new multi-ERC service agreement benefits all 18 NIOSH funded ERCs and the nine disciplines—occupational safety, industrial hygiene, occupational medicine, occupational health nursing, health physics, ergonomics, occupational epidemiology, occupational health psychology, and occupational injury prevention supported by NIOSH. OS&H professionals will have greater access to high-quality, affordable and culturally appropriate continuing education. To date, the MAP ERC, the Deep South ERC, and Johns Hopkins Education and Research Center (ERC) for Occupational Safety and Health have already launched content on the shared site. Maperc.mycrowdwisdom.com

Cultivating a Mindful Workplace Community

The Challenge: Recent work has suggested that there are physical and psychological benefits of participation in mindfulness training. Many communities and workplaces are adopting mindfulness training programs as part of a comprehensive program supporting wellness. Although small to moderate reductions of multiple negative dimensions of psychological stress have been documented, little work has been done to assess whether mindfulness can contribute to an overall positive safety climate.

Approach: Working in a number of settings including university, local government, and a local hospital, the MAP ERC's Occupational Health Psychology Training Program has been involved in contributing to the evidence base to determine if mindfulness training can improve health, well-being and safety. Colorado State University approved the establishment of the Center for Mindfulness as a new Center to coordinate teaching, education and research related to mindfulness on campus and in the community. Two mindfulness training programs are being evaluated and a randomized, wait-list control trial on the feasibility of a Mindfulness-Based Stress Reduction intervention among healthcare workers is being conducted by a MAP ERC trainee in Occupational Health Psychology. A symposium held during Annual Public Health week in 2014 attracted more than 125 participants from Colorado to examine the role of mindfulness in public health.

Impact: The mindfulness work has created new partnerships with organizations in Larimer County, Colorado, addressing workplace wellness and safety and contributed to establishing a network of community residents, practitioners, and trainers interested in the role of mindfulness in health and well-being which includes local business leaders, school personnel, and university researchers.

Promoting psychosocial health among vulnerable workers: A pilot peer education intervention with female sex workers in Nepal

The Challenge: Female sex workers around the world are exposed to an array of dangers as part of their work (e.g. violence, exploitation, harassment, stigma, exposure to STI/HIV infection); dangers which negatively affect their psychosocial health and sense of empowerment and, in turn, their ability to protect themselves from future harms.

Approach: In close collaboration with a local NGO, Lauren Menger, an OHP trainee and PhD candidate at Colorado State University, has been working to design, pilot and evaluate a peer education intervention to

promote the psychosocial health of female sex workers in Kathmandu, Nepal. Ten female sex workers were trained as peer educators and tasked with teaching their peers about different topics related to psychosocial health. A quasi-experimental pre/post design was implemented to assess the impacts of the program on the psychosocial well-being, empowerment and occupational health of the workers who were and were not exposed to the peer educators.

Impact: Female sex workers in Nepal (and the world over) constitute a particularly vulnerable and hard to reach working population, one that has received little attention from the field of occupational health psychology or other occupational health disciplines. The present study offers a unique and innovative approach to enhancing the psychosocial health of female sex workers, which can be used to inform interventions targeting other highly vulnerable working populations.

Helping to Identify Radiation Risks from Fukushima, Japan

The Challenge: After the accident at Fukushima Daiichi nuclear power plant, workers and the public have had grave concerns regarding their radiation exposures.

Approach: Two graduate students in the MAP ERC Health Physics training program, Brett Rosenberg and Jenelle Parson, spent the past summer at the University of Tokyo and Fukushima University. Both students conducted research to determine the impact of radiation on workers, the public and the environment.

Impact: This research has contributed to the public's understanding of radiation risks associated with nuclear power plant accidents. Since the United States has 23 reactors that are similar in design, this research will have great relevance for emergency response workers as well as cleanup workers at home as well as abroad.

Providing Care and Developing Research on Deployment Lung Disease

The Challenge: An increasing body of evidence indicates that there have been significant occupational exposures and respiratory disease risks for Americans who were deployed in the Middle East. However there remain significant gaps in our knowledge as well as a need to develop clinical programs to address the health concerns of returning veterans.

Approach: Occupational and Environmental Medicine Resident and pulmonary physician, Dr. Silpa Krefft, has worked for the past three years at the pulmonary clinic at the Denver VA Medical Center (DVAMC) where she has developed special expertise in addressing the needs of these veterans. The MAP ERC Occupational and Environmental Medicine Residency Program has created a new practicum site at the DVAMC to develop and sustain an occupational lung disease clinic there. Dr. Krefft has received funding through the MAP ERC Pilot Projects Research Program, to investigate deployment lung disease in returning veterans. This has resulting in collaboration between respiratory disease researchers at National Jewish Health and DVAMC to advance our understanding of deployment lung disease.

Impact: A new occupational health clinic that offers clinical expertise for returning veterans has been launched to provide care as well as conduct research. Importantly, while the major focus of that clinic is on deployment-related lung disease, the clinic will be broader in scope and handle all veterans referred for evaluation of exposure-related lung diseases.

Providing Medical Assistance to Miners in the West

The Challenge: Many current and former miners live in geographically remote regions of the West and remain at high risk for pneumoconiosis.

Approach: Under the leadership of Dr. Cecile Rose, at National Jewish Health, MAP ERC faculty members, Occupational and Environmental Medicine Residents and alumni staff clinics in these rural communities. Renewed competitive funding for the Miners Clinics at National Jewish Health was obtained in 2014 from the Health Resources and Services Administration (HRSA). The program identifies miners in Colorado, Wyoming and the Navajo Nation who have developed pneumoconiosis and other work-related health conditions, provides clinical recommendations, and helps address access to care and compensation.

Impact: The highly successful Miners Clinics program will expand its reach to include Texas coal miners, in collaboration with Dr. Craig Glazer, Occupational and Environmental Medicine Residency alumnus and Faculty member at University of Texas Southwestern. Residents in our program will continue to gain special expertise and excel in the field of occupational respiratory disorders.

<http://www.nationaljewish.org/program/prevention/miners-clinic>

Engaging Local Businesses in Total Worker Health™

The Challenge: We are a nation of small businesses. But relatively few small enterprises have comprehensive health protection or health promotion programs. Even larger companies find challenges in creating sustainable health and safety programs. There remain significant gaps in knowledge of how to engage and guide business owners, especially small business owners, who want to promote and protect their workers' health, safety and well-being.

Approach: During the summer of 2013, faculty and staff from the Mountain & Plains ERC and the Colorado School of Public Health launched Health Links™ Colorado. Health Links™ recognizes businesses that champion worker wellbeing and safety with the Health Links™ Healthy Business Certification, a program that provides certification of small businesses for meeting or exceeding worker health, safety and wellness standards. Health Links™ also provides one-on-one advising to qualified small business for building worksite wellness and safety programs. In addition to providing an interactive website that provides algorithm-driven feedback and links to local resources, Health Links™ trainers train community public health and business Health Links Advisors who work with the companies in their communities to develop Healthy Business Action Plans and link them to best practices and resources in their communities.

Results: In its first year, Health Links™ has certified and provided advising sessions for over 130 businesses in 11 counties, including some of the most rural counties in Colorado. There 77 Health Links™ Advisors and Ambassadors throughout the state. This non-profit initiative of the Center for Worker Health and Environment and the MAP ERC is now being recognized as the State of Colorado's Healthy Business Certification and has garnered support from the Colorado Department of Public Health and Environment, the state Office of Economic Development and International Trade, the state-based worker's compensation insurer, Pinnacol Assurance, among other strategic partners in the region. www.healthlinkscolorado.org

Impact: Health Links™ is an innovative program recognizing and supporting businesses that seek help in promoting the health, safety and well-being of their employees. Health Links™ helps instill a culture of health and a culture of safety throughout Colorado's business community, and encourages integrated approaches to health promotion and health protection in keeping with the principles of "Total Worker Health™."

Addressing Occupational Health and Safety Research Gaps in the Oil and Natural Gas Extraction Industry

The Challenge: The oil and gas extraction industry is rapidly growing due to horizontal drilling and high volume hydraulic fracturing, providing new jobs and economic stimulus in the West and elsewhere in the country. And although industry occupational fatality rates are 2.5 times higher than in the construction industry and 7 times

higher than general industry, there remain significant gaps in knowledge concerning the health and safety risk of workers.

Approach: The MAP ERC Occupational and Environmental Medicine Residency Program, in collaboration with the University of Wyoming, NIOSH Western States Office, and other stakeholders conducted a symposium to examine the state of the science and research needs. This led to the publication of the first comprehensive review of the occupational safety and health research gaps in that industry and case studies illustrating challenges and potential solutions. (Witter et al., Occupational Exposures in the Oil and Gas Extraction Industry: State of the Science and Research Recommendations. *Am J Ind Med*, 2014).

Impact: With the continued increase in the number of workers engaged in natural gas and oil extraction, there is a significant need to advance science that targets protection of the workforce. This symposium and peer-reviewed published report provide important guidance for future research.